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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/781,481  | 02/18/2004  | Kie Jin Lee          | 930077-2006         | 3113             |
| 20999   | 7590        | 06/07/2006           | EXAMINER            |                  |
| FROMMER LAWRENCE & HAUG<br>745 FIFTH AVENUE- 10TH FL.<br>NEW YORK, NY 10151 |             |                      | KO, TONY            |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2878                |                  |

DATE MAILED: 06/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/781,481

Applicant(s)

LEE ET AL.

Examiner

Tony Ko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 March 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-16 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/20/06 has been entered.
2. Currently claims 1-16 are still pending.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1-16 recites "wherein an impedance, a resonance frequency mode and a structure of the probe can be controlled in the waveguide resonator", which appears to be new matter.

***Claim Rejections - 35 USC § 102***

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1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-7, 9-12, 14, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Anlage (U.S. Patent 6,809,533).

Regarding claim 1, 3-7, 9-12, 14, and 16, Anlage discloses (Figs. 1 and 2) a nearfield microscope comprising: a wave source (165) with a variable frequency; a waveguide resonator (190) through which the wave emitted from the wave source propagates; a probe (130), which perforates an outer wall of the waveguide resonator and by which the wave that propagates through the waveguide resonator interacts with a sample (125); and a detector (155), which detects the wave that has interacted with the sample, wherein an impedance, a resonance frequency mode and a structure of the probe can be controlled in the waveguide resonator. Anlage also discloses a portion of the probe inside the waveguide resonator has a linear shape and a loop shape (a rectangle shape). Anlage also discloses the probe is formed of metal, a dielectric material, or a magnetic substance (coaxial). Anlage discloses the invention set forth above. Anlage's invention under normal operation would satisfy the equation in claim 7 hence claim 7 is rejected. Anlage also discloses a slit is formed in the waveguide resonator, and the probe is movable along the slit. Anlage discloses the invention set forth above. Anlage's invention under normal operation would satisfy equation in claim 10 and a wave with a frequency greater than the cut-off frequency is used. Anlage

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also discloses the near field microscope when a resonance frequency and a volume before the probe is inserted into the waveguide resonator are  $f_{sub.0}$  and  $v_{sub.0}$ , respectively, and a change in volume of the probe after the probe is inserted into the waveguide resonator is  $\Delta v$ , a change in resonance frequency  $f$  of the waveguide resonator is given by:  $(f-f_0)/f_0 = -2*\Delta v/v_0$ . Anlage also discloses the probe is a hybrid probe manufactured using partial two-step etching. Anlage discloses the wave source emits microwaves or millimeter-waves. Anlage also discloses the probe portion having the loop shape is disposed parallel to an advancing direction of the wave.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anlage in view of Davidov (U.S. Patent 5,781,018).

4. Anlage also the invention set forth above, Anlage does not disclose a tuner which is movably connected to one end of the waveguide resonator and adjusts a length of the waveguide resonator. Davidov discloses a tuner (64), which is movably connected to one end of the waveguide resonator and adjusts a length of the waveguide resonator. It

would have been obvious to a person of ordinary skill in the art at the time of the invention to attach a tuner on the resonator to accurately adjust for the signal frequency.

5. Claims 8 and 15 are rejected under 35 U.S.C 103(a) as being unpatentable over Anlage.

6. Regarding claim 8, Anlage discloses the invention set forth above, Anlage does not disclose the probe is disposed in a position that satisfies  $Z_f = 3d/2p$ ,  $Z_i = d/(2 \cdot p)$ . It is design choice to place the probe in a position that satisfies  $Z_f = 3d/2p$ ,  $Z_i = d/(2 \cdot p)$ . it would have been obvious to a person of ordinary skill in the art at the time of the invention to place the probe in a position that satisfies  $Z_f = 3d/2p$ ,  $Z_i = d/(2 \cdot p)$  to achieve desired electromotive force.

7. Regarding claim 15, Anlage discloses the invention set forth above, Anlage does not disclose the wave emitted from the wave source is  $\lambda$ , the length of the waveguide resonator changes by  $\lambda/4$  increments. It is design choice to change the length by  $\lambda/4$ . it would have been obvious to a person of ordinary skill in the art at the time of the invention to change the length of the waveguide by  $\lambda/4$  increment to efficiently find the desired length which would result in best signal strength.

8. Claims 13 is rejected under 35 U.S.C 103(a) as being unpatentable over Anlage in view of Anlage (U.S. Patent 5,900,618), here in after, Anlage '618.

9. Regarding claim 13, Anlage discloses the invention set forth above. Anlage does not disclose a lock-in amplifier, which minimizes noise by improving a signal-to-noise ratio between the wave source and the waveguide resonator. Anlage 618' discloses in a lock-in amplifier (603) which minimizes noise by improving a signal to noise ratio

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between the wave source and the waveguide resonator. It would have been obvious to a person of ordinary skill in the art at the time of the invention to place a lock-in amplifier, which minimizes noise by improving a signal-to-noise ratio between the wave source and the waveguide resonator to improve signal quality.

### ***Response to Arguments***

10. Applicant's arguments filed 3/20/06 have been fully considered but they are not persuasive. Applicant argues that prior art does not disclose "...wherein an impedance, a resonance frequency mode and a structure of the probe can be controlled in the waveguide resonator." However, it is understood that the waveguide resonator disclosed by Anlage can control an impedance, resonance frequency mode and structure.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Ko whose telephone number is 571-272-1926.

The examiner can normally be reached on Monday-Friday 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TKO



THANH X. LUU  
PRIMARY EXAMINER